IN THE CLAIMS

The following is a complete listing of the claims pending in the present application:

Claim 1. (Original): A method to utilize the energy released by the molten aluminum-water reaction to do useful work by creating a dual explosion in a medium to which desired mechanical effects are to be created comprising the following steps:

a) placing in the presence of water a detonable or combustible explosive device in the said medium, the said explosive device being capable of producing aluminum in its molten state to react with water; and,

b) actuating the said explosive device to initiate the first of the said dual-explosion which is a detonation or combustion of the said explosive device, creating mechanical effects in the said medium and releasing aluminum in its molten state, wherein the molten aluminum then reacts with water to create a second explosion of the said dual-explosion, enhancing or modifying the mechanical effects created by the said first explosion.

Claim 2. (Previously Presented): The method of claim 1 wherein the said medium to which the desired mechanical effects are to be created is one chosen from the group consisting of: water, rock stratum, concrete, steel casing in an oil well, steel tubing in an oil well, steel casing in a gas well, steel casing in an oil well, hydrocarbon bearing formation ~~or~~, coal seam, and a target of any material to be attacked.

Claim 3. (Previously Presented): The method of claim 1 wherein the said mechanical effects in the said medium are the mechanical effects for which an explosive device is designed to achieve is one or a combination chosen from the group of effects

consisting of: pressure wave generation, pressure wave propagation, pressurization of medium, displacement of medium, target penetration, target piercing, target fracturing, crack initialization, crack propagation, medium disintegration, medium fragmentation and fragment movement.

Claim 4. (Previously Presented): The method of claim 1 wherein aluminum is substituted with a light metal or its alloy which also has a tendency to react with water in its molten state and release a substantial amount of thermal energy and hydrogen gas from the reaction, such light metal being one chosen from the group consisting of: magnesium, aluminum-magnesium alloy, aluminum-lithium alloy, and zirconium.

Claim 5. (Withdrawn): A method to produce aluminum in its molten state for the purpose of using the molten aluminum in a reaction with water to do useful work, comprising the following steps:

a) mixing a high explosive and aluminum together, with the amount of aluminum present being surplus in stoichiometry needed to react with all the detonation products of the said high explosive; and,

b) detonating the said high explosive/aluminum mixture, causing the said surplus aluminum to absorb the detonation heat and the heat released from the reactions between the detonation products of the said high explosive with the stoichiometrical portion of aluminum.

Claim 6. (Withdrawn): The method in claim 5 wherein the said high explosive is one chosen from the group consisting of: RDX (Hexogen, Cyclotrimethylenetrinitramine), HMX (Octogen, Cyclotetramethylenetetranitramine), TNT (Trinitrotoluene), PETN (Pentaerythritol Tetranitrate), PYX, HNS, Ammonium Nitrate, ANFO (Ammonium Nitrate Fuel Oil), emulsion explosives and blasting agents.

Claim 7. (Withdrawn): A method to produce aluminum in its molten state, comprising the following steps:

a) mixing an oxidizer with aluminum, with the amount of aluminum present being surplus in stoichiometry needed to react with all of the oxidizer; and

b) igniting the said oxidizer/aluminum mixture, causing the said surplus aluminum to absorb the heat released from the reaction between the oxidizer and the stoichiometric portion of aluminum.

Claim 8. (Withdrawn): The method of claim 7 wherein the said oxidizer is chosen from the group consisting of: Copper Oxide (CuO), Cuprous Oxide (Cu_2O), Ferrous Oxide (FeO), Ferric Oxide (Fe_2O), Triiron Tetroxide (Fe_3O_4), Cobalt Oxide (Co_2O_3), Zinc Oxide (ZnO), Lead Oxide (PbO), Lead Dioxide (Pb_2O), Lead Tetroxide (Pb_3O_4) and Manganese Oxide (MnO_2).

Claim 9. (Withdrawn): The method of claim 7 wherein the said oxidizer is an oxygen rich reagent chosen from the group consisting of: Sodium Nitrate ($NaNO_3$), Potassium Nitrate (KNO_3), Barium Nitrate ($Ba(NO_3)_2$), Ammonium Nitrate (NH_4NO_3), Sodium Chlorate ($NaClO_3$), Potassium Chlorate ($KClO_3$), Lithium Perchlorate ($LiClO_4$), Potassium Perchlorate ($KClO_4$), Strontium Perchlorate ($Sr(ClO_4)_2$) and Ammonium

Perchlorate ($NH_4(ClO_4)_2$).

Claim 10. (Withdrawn): The method of claim 7 wherein the said oxidizer is water or a water solution of oxygen-rich reagents chosen from the group consisting of: Sodium Nitrate ($NaNO_3$), Potassium Nitrate (KNO_3), Barium Nitrate ($Ba(NO_3)_2$), Ammonium Nitrate (NH_4NO_3), Sodium Chlorate ($NaClO_3$), Potassium Chlorate ($KClO_3$), Lithium Perchlorate ($LiClO_4$), Potassium Perchlorate ($KClO_4$), Strontium Perchlorate ($Sr(ClO_4)_2$) and Ammonium Perchlorate ($NH_4(ClO_4)_2$).